AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A Doppler velocity detection device comprising:

a transmit/receive unit for transmitting/receiving pulse waves to/from an object whose velocity is to be measured a plurality of times, and

a signal detector/analyzer unit for analyzing the velocity of the object whose velocity is to be measured, based on the received signals,

wherein said signal detector/analyzer unit ~~obtains reception echo time-series signals by arranging~~ is configured to extract reception echo signals of equal lapse time from transmission times of pulses, from a plurality of reception echo signals obtained by transmission/reception of a plurality of times, ~~in order of the transmission times and expands~~ and expand the reception echo-time series signals arranged in order of the transmission times as components of a Legendre polynomial, and ~~obtains~~ obtain a velocity signal of the object whose velocity is to be measured ~~on the basis of~~ based on the magnitudes of expansion coefficients.

2. (Currently Amended) A Doppler velocity detection device according to claim 1, wherein an expansion coefficient of an even-numbered degree term and an expansion coefficient of an odd-numbered degree term which is different from the even-numbered degree term by one degree, derived when the reception echo time-series signals are expanded as components of a Legendre polynomial starting from the 0th degree, are linearly connected by using an imaginary unit as a coefficient, thereby obtaining a complex expansion coefficient, and deriving a velocity signal

from ~~and, on the basis of~~ the ratio between the magnitude of each complex expansion coefficient and the magnitude of an interval between the complex expansion coefficients, ~~a signed velocity signal is derived~~and wherein the velocity signal includes a sign code to distinguish between a transmission direction of the pulse waves and an opposite direction to the transmission direction.

3. (Currently Amended) A Doppler velocity detection device comprising:

means for transmitting/receiving pulse waves to/from a subject a plurality of times; and

velocity analyzing means for analyzing a velocity of a moving reflector in the subject on the basis of a reception echo signal,

wherein the velocity analyzing means ~~obtains~~ is configured to obtain a complex expansion coefficient by linearly connecting an expansion coefficient of an even-numbered degree term and an expansion coefficient of an odd-numbered degree term which is different from the even-numbered degree term by one degree, derived when ~~reception echo time-series signals obtained by arranging~~ reception echo signals of equal lapse time extracted from pulse transmission times, from a plurality of reception echo signals obtained by transmission/reception of a plurality of times, ~~in order of the transmission times are~~ are arranged in order of transmission time and expanded as components of a Legendre polynomial starting from the 0th degree, by using an imaginary unit as a coefficient, and obtains a ~~signed~~ velocity signal of a moving reflector in the subject ~~on the basis of~~ based on the ratio between the magnitude of each complex expansion coefficient and the magnitude of an interval between the complex expansion coefficients, and

wherein the velocity signal includes a sign code to distinguish between a transmission direction of the pulse waves and an opposite direction to the transmission direction.

4. (Original) A Doppler velocity detection device according to claim 3, further comprising display means for two-dimensionally or three-dimensionally displaying a velocity signal of the moving reflector together with an echo signal from a stationary reflector in the subject.

5. (Currently Amended) An ultrasonographic device comprising:

an ultrasonic probe;

means for allowing the ultrasonic probe to transmit/receive ultrasonic pulse waves to/from a subject a plurality of times; and

velocity analyzing means for analyzing velocity of a moving reflector in the subject on the basis of reception echo signals from the subject,

wherein the velocity analyzing means expands ~~reception echo time series signals obtained by arranging~~ reception echo signals of equal lapse time extracted from transmission times of the ultrasonic pulses, from a plurality of reception echo signals obtained by transmission/reception of a plurality of times, arranges the reception echo-time series signals in order of transmission times, expands the reception echo-time series signals ~~in order of the transmission times~~ as components of a Legendre polynomial, and obtains a velocity signal of ~~a~~ the moving reflector in the subject ~~on the basis of~~ based on the magnitude of each of the expansion coefficients.

6. (Currently Amended) An ultrasonographic device according to claim 5, wherein the velocity analyzing means ~~obtains~~ is configured to obtain a complex expansion coefficient by linearly connecting an expansion coefficient of an even-numbered degree term and an expansion coefficient of an odd-numbered degree term which is different from the even-numbered degree term by one degree, derived when the reception echo time-series signals are expanded as components of a Legendre polynomial starting from the 0th degree, by using an imaginary unit as a coefficient, and ~~obtains~~ configured to obtain a ~~a signed~~ velocity signal ~~on the basis of~~ based on the ratio between the magnitude of each complex expansion coefficient and the magnitude of an interval between the complex expansion coefficients, and wherein the velocity signal includes a sign code to distinguish between a transmission direction of the pulse waves and an opposite direction to the transmission direction.

7. (Currently Amended) An ultrasonographic device comprising:

an ultrasonic probe; means for allowing the ultrasonic probe to transmit/receive ultrasonic pulse waves to/from a subject a plurality of times; and

velocity analyzing means for analyzing velocity of a blood flow in a moving organ in the subject on the basis of reception echo signals from the subject,

wherein the velocity analyzing means obtains a complex expansion coefficient by linearly connecting an expansion coefficient of an even-numbered degree term and an expansion coefficient of an odd-numbered degree term which is different from the even-numbered degree term by one degree, derived when the reception echo time-series signals obtained by arranging reception echo signals of equal lapse time from transmission times of the ultrasonic pulses in order of the transmission

times are expanded as components of a Legendre polynomial starting from the 0th degree, by using an imaginary unit as a coefficient, and obtains a ~~signed~~ velocity signal of the blood flow in the subject ~~on the basis of~~ based on the ratio between the magnitude of each complex expansion coefficient and the magnitude of an interval between the complex expansion coefficients, and

wherein the velocity signal includes a sign code to distinguish between a transmission direction of the pulse waves and an opposite direction to the transmission direction.

8. (Original) An ultrasonographic device according to claim 7, further comprising display means for displaying a distribution image of a motion velocity of the organ or a spatial change in the motion velocity and a blood flow distribution image obtained simultaneously so as to be superimposed or arranged side by side.

9. (Original) An ultrasonographic device according to claim 7 or 8, wherein a blood flow having a velocity component of 3 mm/sec or higher toward the ultrasonic probe is detected and displayed while a motion velocity toward the ultrasonic probe of the organ changes by 1 mm/sec.

10. (Currently Amended) An ultrasonographic device comprising:

ultrasonic wave transmitting/receiving means for allowing a plurality of ultrasonic probes to transmit/receive an ultrasonic pulse to/from a subject a plurality of times;

a transmission beam former for controlling a transmission focal position of an ultrasonic pulse in the subject;

a reception beam former for controlling a reception focal position in the subject;

a controller for controlling the ultrasonic wave transmitting/receiving means, the transmission beam former, and the reception beam former; and

velocity analyzing means for analyzing velocity of a moving reflector in the subject on the basis of reception echo signals from the subject,

wherein the velocity analyzing means ~~obtains~~ is configured to obtain a complex expansion coefficient by linearly connecting an expansion coefficient of an even-numbered degree term and an expansion coefficient of an odd-numbered degree term which is different from the even-numbered degree term by one degree, derived when ~~reception echo time-series signals obtained by arranging~~ reception echo signals of equal lapse time extracted from transmission times of the ultrasonic pulses, from a plurality of reception echo signals obtained by transmission/reception of a plurality of times, are arranged in order of transmission time and ~~in order of the transmission times are~~ expanded as components of a Legendre polynomial starting from the 0th degree, by using an imaginary unit as a coefficient, and ~~obtains~~ configured to obtain a ~~a signed~~ velocity signal of ~~a~~ the moving reflector in the subject ~~on the basis of~~ based on the ratio between the magnitude of each complex expansion coefficient and the magnitude of an interval between the complex expansion coefficients, and

wherein the velocity signal includes a sign code to distinguish between a transmission direction of the pulse waves and an opposite direction to the transmission direction.